# Burls, Galls, and Tumors

## Abnormal swellings on stems and branches

**Cause—**Burls, galls, and tumors may be caused by bacteria, fungi, insects, environmental stress, or genetic predisposition. In the Rocky Mountain Region, insect and pathogen-induced burls and galls are common on hardwoods, but the cause of conifer stem galls is often unknown. Galls on ponderosa and lodgepole pines, caused by western gall rust, are discussed separately in this guide.

**Hosts—**Many conifer and hardwood species may be hosts. In the Rocky Mountain Region, incidence is especially common in lodgepole pine, Douglas-fir, Engelmann spruce, subalpine fir, and aspen.

**Signs and Symptoms—**Burls, galls, and tumors are abnormal swellings that typically occur on stems and branches (figs. 1-3). They often form in succession along the stem. Swellings vary in size and may be smooth or rough with rounded or flared edges. Adventitious buds or sprouts sometimes protrude from the surface. Trees of all ages and sizes may be affected, and trees may occur singly or in groups. Incidence is especially frequent in high-elevation sites of the Rocky Mountain Region.

**Impact—**Growth impacts are minimal, but burls and other abnormal swellings may cause significant defect and deformation, which lowers timber value. On the other hand, researchers found less decay in aspen trees that had black stem galls in Alberta, Canada, suggesting that galled trees may be more valuable from a timber perspective in certain situations. The distinctive wood is also treasured by artists who use it for sculptures, furniture, and other forms of woodworking (fig. 4).

**Management—**Control strategies have not been developed for these swellings, and management is not generally warranted. However, avoiding wounding and removing damaged trees during intermediate stand treatments and maintaining host vigor may reduce impacts.

Figure 1. Several burls on an Engelmann spruce stem, cause unknown. *Photo: Kelly S. Burns, USDA Forest Service.*

Figure 2. Black stem gall on quaking aspen, cause unknown. *Photo: William Jacobi, Colorado State University.*

Figure 3. Galls on a quaking aspen caused by the poplar vagabond aphid *(Mordwilkoja vagabunda). Photo: Whitney Cranshaw, Colorado State University, Bugwood.org.*

Figure 4. A sculpture created from a burled spruce tree. *Photo: Jim Worrall, USDA Forest Service.*

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